

CLAIMS

1. A fuel cell power generating system characterized by comprising:
a fuel cell power generating apparatus for electrochemically
5 reacting a predetermined fuel and air to allow a power generator to
generate electric power; and
a loading apparatus connected to said fuel cell power generating
apparatus through a predetermined electric cable for supplying the
electric power generated by said fuel cell power generating apparatus,
10 said loading apparatus utilizing the electric power to operate;
wherein said fuel cell power generating apparatus receives loading
apparatus power information on electric power required for said loading
apparatus through the electric cable upon supplying the electric power to
said loading apparatus through the electric cable, and controls power
15 generation according to the loading apparatus power information
received.
2. The fuel cell power generating system as described in claim 1
characterized in that:
20 said fuel cell power generating apparatus controls flow rate of the
fuel fed to said power generator and/or the electric power supplied to said
loading apparatus.
3. The fuel cell power generating system as described in claim 1
25 characterized in that:
said loading apparatus sends the loading apparatus power
information superimposed on a voltage signal flowing through the electric
cable.
- 30 4. The fuel cell power generating system as described in claim 3
characterized in that:

said fuel cell power generating apparatus receives the loading apparatus power information with predetermined standard or frequency.

5. The fuel cell power generating system as described in claim 1
5 characterized in that:

said fuel cell power generating apparatus outputs communication start instruction information for starting the communication with the loading apparatus to said loading apparatus when the loading apparatus is connected to the fuel cell power generating apparatus through the
10 electric cable.

6. The fuel cell power generating system as described in claim 1
characterized in that:

in case that the loading apparatus cannot be directly connected to
15 the fuel cell power generating apparatus to send or receive information, a predetermined transduction means is attached to the fuel cell power generating apparatus, and the electric cable is connected to the transduction means to connect said fuel cell power generating apparatus and said loading apparatus .

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7. The fuel cell power generating system as described in claim 6
characterized in that said transduction means comprises:

a plug portion for power reception for receiving the electric power generated by said fuel cell power generating apparatus;

25 a connector portion for power information communication for sending the loading apparatus power information to said fuel cell power generating apparatus; and

a socket portion for loading apparatus for inserting the electric cable extending from said loading apparatus.

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8. The fuel cell power generating system as described in claim 7

characterized in that:

said fuel cell power generating apparatus has an electric power output means having a socket portion for power supply corresponding to said plug portion for power reception in said transduction means, and a
5 socket portion for power information communication corresponding to said connector portion for power information communication in said transduction means.

9. The fuel cell power generating system as described in claim 8
10 characterized in that:

said electric power output means has a wrong insertion prevention means for preventing an error in insertion or fitting for said plug portion for power reception and said connector portion for power information communication in said transduction means.

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10. The fuel cell power generating system as described in claim 8
characterized in that:

said fuel cell power generating apparatus has a plurality of electric power output means.

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11. The fuel cell power generating system as described in claim 8
characterized in that:

said transduction means has incorporated a resistance element exhibiting a resistance corresponding to the power consumption of said
25 loading apparatus, and said connector portion for power information communication is directly connected to said resistance element.

12. The fuel cell power generating system as described in claim 11
characterized in that:

30 said fuel cell power generating apparatus flows a fine electric current to said connector portion for power information communication in

said transduction means, and detects the resistance as loading apparatus power information.

13. The fuel cell power generating system as described in claim 12
5 characterized in that:

said fuel cell power generating apparatus recognizes electric power required for said loads device, with said resistance detected being referred to a table of correlation between the power consumption and the resistance of said loading apparatus.

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14. The fuel cell power generating system as described in claim 1
characterized in that:

said fuel cell power generating apparatus monitors the amount of the residual fuel stored in a predetermined fuel storage means.

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15. A method of controlling fuel cell power generation for controlling
power generation by a fuel cell power generating apparatus for
electrochemically reacting a predetermined fuel and air to allow a power
generator to generate electric power, said method characterized by
20 comprising:

a step of generating electric power by the fuel cell power generating apparatus;

a step of receiving loading apparatus power information on electric power required for a loading apparatus through a predetermined electric
25 cable for supplying the electric power generated by the fuel cell power generating apparatus upon supplying the electric power to the loading apparatus through the electric cable, wherein the loading apparatus is connected to the fuel cell power generating apparatus through the electric cable and utilizes the electric power to operate; and

30 a step of controlling power generation by the fuel cell power generating apparatus according to the loading apparatus power

information received.

16. A fuel cell power generating apparatus for electrochemically reacting a predetermined fuel and air to allow a power generator to
5 generate electric power, said apparatus characterized by comprising:
a power generator for generating electric power using the fuel fed;
and
a control means for receiving loading apparatus power information on electric power required for a loading apparatus through a
10 predetermined electric cable for supplying the electric power generated by the power generator upon supplying the electric power to the loading apparatus through the electric cable, wherein the loading apparatus is connected through the electric cable and utilizes the electric power to operate, and for controlling power generation according to the loading
15 apparatus power information received.

17. The fuel cell power generating apparatus as described in claim 16 characterized in that:

- said apparatus further comprises a flow rate control means for
20 controlling the flow rate of the fuel fed from a fuel storage means for storing fuel fed to said power generator, and an electric power control means for controlling the electric power generated by the power generator;

- wherein said control means controls flow rate of the fuel fed from
25 said fuel storage means to said power generator by controlling said flow rate control means, and/or the electric power supplied to said loading apparatus by controlling said electric power control means, according to said loading apparatus power information.

- 30 18. The fuel cell power generating apparatus as described in claim 17 characterized in that:

said control means outputs communication start instruction information for starting the communication with the loading apparatus to said loading apparatus through said electric power control means when the loading apparatus is connected to the fuel cell power generating apparatus through the electric cable.

19. The fuel cell power generating apparatus as described in claim 18 characterized in that:

said loading apparatus power information is sent from said loading apparatus superimposed on a voltage signal flowing through the electric cable.

20. The fuel cell power generating apparatus as described in claim 19 characterized in that:

said control means receives the loading apparatus power information with predetermined standard or frequency.

21. The fuel cell power generating apparatus as described in claim 18 characterized in that:

said electric power control means picks up said loading apparatus power information from the signal sent through said electric cable to send said loading apparatus power information to said control means.

22. The fuel cell power generating apparatus as described in claim 16 characterized in that:

in case that the loading apparatus cannot be directly connected to the fuel cell power generating apparatus to send or receive information, a predetermined transduction means is attached to the fuel cell power generating apparatus, and the electric cable is connected to the transduction means to connect said control means and said loading apparatus .

23. The fuel cell power generating apparatus as described in claim 22 characterized in that said transduction means comprises:

5 a plug portion for power reception for receiving the electric power generated by said fuel cell power generating apparatus;

a connector portion for power information communication for sending the loading apparatus power information to said fuel cell power generating apparatus; and

10 a socket portion for loading apparatus for inserting the electric cable extending from said loading apparatus .

24. The fuel cell power generating apparatus as described in claim 23 characterized by having an electric power output means having a socket portion for power supply corresponding to said plug portion for power
15 reception in said transduction means, and a socket portion for power information communication corresponding to said connector portion for power information communication in said transduction means.

25. The fuel cell power generating apparatus as described in claim 24
20 characterized in that:

said electric power output means has a wrong insertion prevention means for preventing an error in insertion or fitting for said plug portion for power reception and said connector portion for power information communication in said transduction means.

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26. The fuel cell power generating apparatus as described in claim 24 characterized by having a plurality of electric power output means.

27. The fuel cell power generating apparatus as described in claim 24
30 characterized in that:

said transduction means has incorporated a resistance element

exhibiting a resistance corresponding to the power consumption of said loading apparatus , and said connector portion for power information communication is directly connected to said resistance element.

- 5 28. The fuel cell power generating apparatus as described in claim 27 characterized in that:

 said control means flows a fine electric current to said connector portion for power information communication in said transduction means, and detects the resistance as loading apparatus power information.

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29. The fuel cell power generating apparatus as described in claim 28 characterized in that:

 said control means recognizes electric power required for said loads device, with said resistance detected being referred to a table of correlation between the power consumption and the resistance of said loading apparatus .

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30. The fuel cell power generating apparatus as described in claim 16 characterized in that:

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 said control means monitors the amount of the residual fuel stored in a fuel storage means for supplying fuel to said power generator.

31. The fuel cell power generating apparatus as described in claim 16 characterized in that:

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 said power generator supplies a power generation condition signal indicating power generation conditions to said control means.